

# Physical Inactivity

**Definition:** Physical activity is bodily movement—from gardening, walking and household chores to fitness activities and competitive sports—that expends energy. Sedentary people have no leisure time physical activity. Physical inactivity means not active at the recommended level (includes people who are sedentary as well as those who are less than moderately active). Moderate physical activity involves energy expenditure comparable to brisk walking at least 30 minutes per day 5 or more days per week.

## Summary

**Physical inactivity increases the risk of heart disease and stroke, worsens blood cholesterol and blood pressure levels, and contributes to other leading causes of death and disability, including osteoporosis, colon cancer, and non-insulin dependent diabetes.**

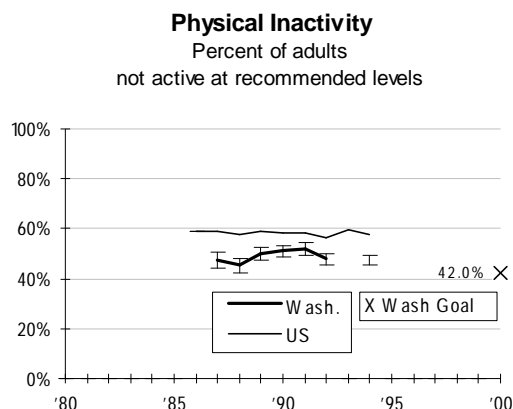
**The recommended minimum amount of physical activity for optimal health is participation in at least 30 minutes of moderate activity on most days. About 18.2% ( $\pm 1.4\%$ ) of Washington adults are sedentary, and 47.5% ( $\pm 1.8\%$ ) of adults in the state are not active at the recommended level.**

**Many social, psychological, and environmental factors influence a person's decision to be active. Successful strategies to promote physical activity focus on education and environmental modification.**

*Note: Persons with known heart disease, a previous stroke, diabetes, high blood pressure or other physical condition which may need special attention should consult their primary care provider before starting an exercise program.*

## Time Trends

The overall percentage of Washington adults who are not active at the recommended level has remained essentially stable since it was first



measured in 1987. The adult population in Washington state has a notably lower prevalence of physical inactivity than the US population. In 1994, 47.5% ( $\pm 1.8$ ) of adults in Washington were inactive, compared with a national rate of 58%. The prevalence of physical inactivity in the US has remained essentially unchanged since 1985.<sup>1</sup>

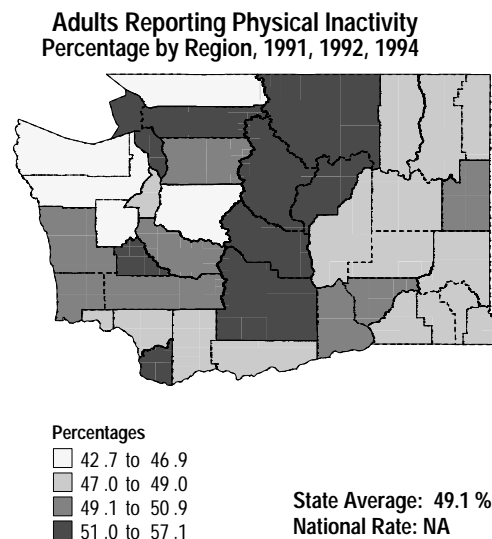
## Year 2000 Goal

Washington's goal for the year 2000 is to decrease to 42% the proportion of adults who are physically inactive.

A related goal is to decrease to 12% those who are sedentary. In 1994, the proportion of sedentary individuals among Washington adults was 18.2% ( $\pm 1.4\%$ ). The median state-specific rate for the U.S. in 1994 was 28.8%.

## Geographic Variation

Proportions of physically inactive adults by region, from 1992 to 1994, are displayed in the map below.



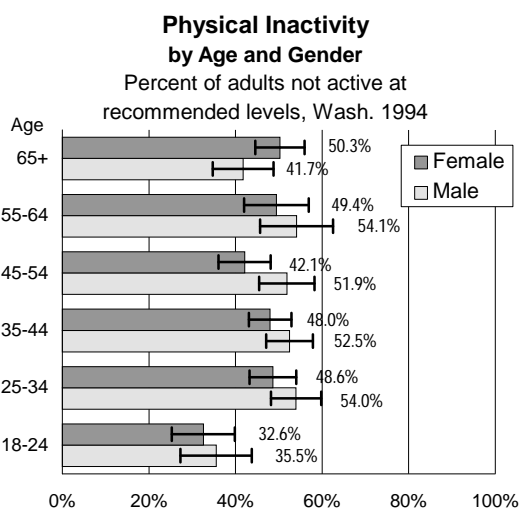
Washington is consistently among the states with the lowest proportions of adults who are not active at the recommended level. In a 1992 survey of persons ages 65 and older, Washington residents were found to be the least sedentary in the country.<sup>2</sup>

## Age and Gender

People tend to be most active in childhood. Unfortunately there is some indication that children in the US are becoming more sedentary.<sup>3</sup> In 1995, 39.3% ( $\pm 3.6$ ) of Washington 6th graders and 56.9% ( $\pm 5.4$ ) of 12th graders did not meet minimum physical activity guidelines for their age group. No data are available for younger children in Washington.

Adults under age 25 are more likely to be physically active than their older counterparts. A relatively low 34.1% ( $\pm 4.1$ %) of Washington 18-24 year olds in 1994 reported inadequate physical activity.

While men were somewhat more likely than women to be physically inactive in all but the oldest age group, the overall prevalence of physical inactivity does not differ significantly between men and women. Nonetheless, activity patterns may vary. For example, while men participate more in sports, women may more often engage in light to moderate activities such as household chores.



The graphic above shows people with inadequate physical activity levels who were either sedentary or engaged in irregular activity below the recommended levels. Those who are sedentary follow a similar pattern by age group.

Among people over age 55, 22.7% ( $\pm 2.4$ %) were sedentary, compared with 17% ( $\pm 3$ %) of 25-34 year olds and 10.6% ( $\pm 3.3$ %) of 18-24 year olds.

## Race and Ethnicity

Data limitations preclude analysis of physical inactivity rates for individual racial and ethnic minority groups in Washington. However, in 1994 the reported prevalence of physical inactivity among Caucasians was essentially the same as that for non-Caucasians.

Differences in rates of physical inactivity have often been observed between racial and ethnic groups, however, with Caucasians appearing to be less sedentary than African Americans or Hispanics.<sup>4</sup> Most if not all of these differences result from the effects of differences in income and education level.<sup>5</sup>

## Income and Education

Persons with lower incomes are less likely to be physically active than persons with higher incomes. Data from the 1985 National Health Interview Survey show a direct correlation between lower incomes and a sedentary lifestyle. Individuals with incomes of less than \$7,000 were most likely to be sedentary and those with incomes of \$40,000 or more were least likely to be sedentary.<sup>6</sup>

An individual's level of education appears to be the most predictive factor associated with being sedentary. Approximately 50% of persons with nine or fewer years of education reported that they were sedentary, compared with only 18.5% of those with at least one year of education after high school.<sup>7</sup>

Washington data reveal a similar pattern. In 1994, 63.1% ( $\pm 5.4$ %) of people with less than high school education reported physical activity below recommended levels. Among those with more than high school education, that proportion was 42.5% ( $\pm 2.3$ %). Also, 54.2% ( $\pm 3.7$ %) of individuals with household incomes of less than \$20,000 were physically inactive, compared with 47.1% ( $\pm 2.3$ %) of more affluent persons.

## Health Effects

Physical inactivity is a major risk factor for several primary causes of disease, disability and death. It is associated with increased total death rates as well as cause-specific mortality.<sup>8</sup>

The greatest health benefits of physical activity are achieved when sedentary individuals become moderately active. For optimal health, the Centers for Disease Control and Prevention and the American College of Sports Medicine recommend that all adults participate in at least 30 minutes of moderate intensity physical activity on most days.<sup>9</sup> Health benefits increase with increasing levels of activity up to and beyond this level.

The following is a discussion of the conditions that are associated with physical inactivity.

**Heart Disease.** Heart disease is the leading cause of death in Washington state.<sup>10</sup> Physically inactive people have been shown to have almost twice the likelihood of developing heart disease as those who engage in regular, moderate physical activity.<sup>11</sup> An estimated 1,300 heart disease deaths in Washington could be prevented annually if half of the people who are currently inactive became at least moderately active.<sup>12</sup>

**Stroke.** The most common cause of stroke is atherosclerosis of the blood vessels that supply the brain.<sup>13</sup> Physical inactivity is a modifiable risk factor for atherosclerosis.<sup>14</sup> Physical activity can also be used to control hypertension, which is the major risk factor for stroke.<sup>15</sup>

**Non-Insulin Dependent Diabetes(NIDDM).** The onset of NIDDM usually occurs in adulthood and is usually associated with weight gain and obesity. Active adults have lower rates of NIDDM.<sup>16</sup> Regular physical activity helps directly to control NIDDM by reducing glucose levels in the blood and may assist in the primary prevention of NIDDM.<sup>17</sup>

**Osteoporosis.** Physical activity strengthens bones and increases bone density. This helps reduce the risks of osteoporosis and the fractures that result from reduced bone density in the elderly.<sup>18</sup>

**Cancer.** Increased physical activity may help to prevent certain types of cancer.<sup>19</sup> Currently, the best evidence for a protective effect from physical activity exists for colon cancer.<sup>20 21</sup>

**Hypertension and High Cholesterol.** People who are physically inactive have about twice the risk of developing hypertension as those who are active. Regular physical activity also raises HDL cholesterol and reduces levels of total cholesterol and triglycerides, all contributing to a lower risk of heart disease.<sup>22</sup>

**Functional Status.** Physical activity increases muscular strength, endurance, and flexibility, which can help to make routine daily tasks at home and at work less difficult. This can result in fewer injuries and less fatigue associated with bending, lifting, reaching, stooping, and falling. It can also help older adults maintain physical independence for a longer period of time. Physical inactivity has been identified as a risk factor for low back pain and depression.<sup>23</sup>

## Associated Factors, Conditions, and Outcomes

The degree of physical activity in a person's life, or in a population in general, can be influenced by a variety of factors. The following are some of the most pronounced:

**Knowledge, Attitudes, and Beliefs.** These factors play a large role in an individual's decision to lead a physically active life. People are more likely to be physically active if they believe that it will improve their health, and/or that they are healthy enough to do activities safely. Those who perceive that they have access to facilities and personal time are also more likely to be active.

**Psychological /Behavioral Attributes and Skills.** People who are self-motivated are more likely to be active. The level at which the individual feels capable of activity or previous success in physical activity may also be an issue. Other factors include the desire to set a good example for children and live a long life for the grandchildren.

**Environmental Factors.** Several components of the physical environment, especially access to convenient or nearby facilities, affect a person's choice to be active. Safe, well-lit, and well-marked walking trails, bike paths, sidewalks, and stairways are good examples of environmental factors which can encourage more physical activity. Others include external social support and visual or auditory prompts such as notes on the refrigerator or radio announcements.

**Readiness to Change.** Prochaska's Stages of Change theory has proven useful in predicting the likelihood of adoption of healthy behaviors, including physical activity, and in individualizing educational materials.<sup>24</sup> In this framework, some people have not yet recognized that a sedentary lifestyle is a problem. Others know that physical activity is good for them but are not ready to

change. Others are actually preparing or planning to become more physically active. Individuals in the action stage have started to be more physically active, and those in the maintenance stage have been physically active for at least 6 months.

### Groups of Particular Interest

**Youth.** Activity patterns established in adolescence are thought to persist throughout life. Maintaining the active lifestyles of children as they transition to adulthood is an important component of physical activity promotion.

**Others.** Several other groups of people tend to be relatively less active. Racial minorities, the elderly, those with lower socioeconomic status, and those with less education have already been discussed. Other groups who have been shown to be less active include people with disabilities, those who are already ill, people who are overweight, and smokers. For some of those, it is difficult to determine whether the condition causes the inactivity or vice-versa.

### Intervention Points, Strategies and Effectiveness

The goal of the following concepts is to increase the level of physical activity across the entire population and especially to encourage sedentary people to become active. They include a variety of interventions, most of which have been part of successful, comprehensive programs focused on a public health approach to health promotion.<sup>25 26</sup> The first three sections are focused on interventions to enhance individual motivation and readiness to change. The last three focus on creating environments that support changes in physical activity behavior.

**Increased Awareness, Knowledge and Motivation:** Written and broadcast media campaigns, either community-wide or site specific, have proven effective for physical activity promotion. While most people are aware that physical activity is beneficial, many need motivation and a better understanding of current physical activity recommendations.<sup>27</sup>

**Skills Needed to Make Desired Lifestyle Changes:** Motivational and informational messages are better received when targeted to an individual's stage of readiness to change.<sup>28</sup> Individual or small-group educational interventions have demonstrated effectiveness, especially when

intervention content and materials are stage-specific. This type of strategy has been implemented with success in schools, worksites, through physicians' offices, and in other community settings.

**Opportunities to Practice New Skills and Behaviors in a Safe Setting:** Organized physical activity events, which provide supervised exercise opportunities, are widely used to promote physical activity. Actual physical activity participation seems to be greatest for setting-specific events, such as those in the schools or worksites. The extent to which such events contribute to long-term increases in participation requires further evaluation.

**Supportive Social Networks:** Social support plays a very important role in behavior change. Examples of interventions that provide such social support include walking clubs, "buddy systems" or support groups, and special events that draw people together to exercise. Community coalitions and task forces may strongly influence community exercise patterns, for example by sponsoring events or programs.

**A Supportive Physical Environment:** The availability of affordable, comfortable, safe and convenient facilities and opportunities is necessary to motivate physical activity. Well marked bicycle and walking trails, fitness centers and gyms with sufficient equipment and long hours, downtown centers restricted to foot or bicycle traffic; buildings with stairways that are more convenient than elevators and escalators; planned communities with businesses and schools next to residential areas and connected by bicycling and walking paths are examples of environmental factors which have been shown to increase physical activity in several communities.

**Supportive Policies, Laws, and Regulations:** The Intermodal Surface Transportation Efficiency Act (ISTEA), which allows states to use federal transportation funds for the development of walking trails and bicycle paths, is one of the few examples of the application of this strategy to physical activity promotion. ISTEA does not require specific funding allocations, but requires each state to assign a bicycle/pedestrian coordinator. While few examples of legislative and regulatory strategies have been developed for this purpose, this approach has proven very effective for tobacco and alcohol control. The effects of

ISTEA are currently being evaluated. Specific policies, laws and regulations could be developed to support a range of activity-enhancing changes in the physical and social environment.

**See related sections on Coronary Heart Disease, High Blood Pressure, High Blood Cholesterol, Diabetes, and Stroke.**

### **Data Sources**

State survey data: Washington State Department of Health. Behavioral Risk Factor Surveillance System (BRFSS); Washington State Survey of Adolescent Health Behaviors, 1995.

National survey data: Centers for Disease Control and Prevention. BRFSS.

### **For More Information**

Washington Department of Health, Heart Health Program (360) 586-6091.

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Washington Department of Health. Washington State Heart Disease and Stroke Prevention Plan. WSDOH, Olympia, WA. 1995.

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### **Endnotes:**

<sup>1</sup> National Center for Health Statistics. Health People 2000 Review, 1994. Hyattsville, MD: Public Health Service. 1995.

<sup>2</sup> State-Specific Changes in Physical Inactivity Among Persons Aged  $\geq 65$  Years -- US, 1987-92. MMWR. 1995;44:663-673.

<sup>3</sup> Baranowski, T., et al. "Assessment, prevalence, and cardiovascular benefits of physical activity and fitness in youth" Medicine and Science in Sports and Exercise. 1992;24(6):S237-S247.

<sup>4</sup> Caspersen CJ, Powell KE, Christenson GM. Status of the 1990 physical fitness and exercise objectives--evidence from NHIS 1985. Public Health Rep. 101:587-92. 1986.

<sup>5</sup> White GC, Powell KE, Hogelin GC, et al. The Behavioral Risk Factor Surveys: IV. The descriptive epidemiology of exercise. Am J Prev Med. 3:304-10. 1987.

<sup>6</sup> Caspersen CJ, Powell KE, Christenson GM. Status of the 1990 physical fitness and exercise objectives--evidence from NHIS 1985. Public Health Rep. 101:587-92. 1986.

<sup>7</sup> Ibid.

<sup>8</sup> Blair SN, Kohl HW, Barlow CE, Paffenbarger RS, et al. Changes in physical fitness and all-cause mortality. J Am Med Assoc. 273(14):1093-8.

<sup>9</sup> Pate RR, Pratt M, Blair SN, Haskell UL, et al., Physical Activity and Public Health: A Recommendation from the Centers...and the American...Medicine. J Amer Med Assn, 1995; 273(5):402-7.

<sup>10</sup> Washington State Heart Disease and Stroke Prevention Plan, Washington State Department of Health. 1995.

<sup>11</sup> Promoting Physical Activity: A Guide for Community Action, US Department of Health and Human Services. 1995.

<sup>12</sup> Washington State Heart Disease and Stroke Prevention Plan, Washington State Department of Health. 1995.

<sup>13</sup> Pollock, M., Wilmore, J., and Fox, S., *Exercise In Health and Disease*. Philadelphia, PA.: W.B. Saunders Company; 1984.

<sup>14</sup> Washington State Heart Disease and Stroke Prevention Plan, Washington State Department of Health. 1995.

<sup>15</sup> Ibid.

<sup>16</sup> US Department of Health and Human Services. Promoting Physical Activity: A Guide for Community Action, USDHHS, Bethesda, MD. Draft May 1995.

<sup>17</sup> Ibid.

<sup>18</sup> Ibid.

<sup>19</sup> Ibid.

<sup>20</sup> Giovanucci E, Ascherio A, Rimm B, Colditz GA, et al. Physical activity, obesity, and risk for colon cancer and adenoma in men. Ann Intern Med. 122(5):327-34.

<sup>21</sup> U.S. Department of Health and Human Services. Physical Activity and Health: A Report of the Surgeon General. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, July 1996.

<sup>22</sup> US Department of Health and Human Services. Promoting Physical Activity: A Guide for Community Action, USDHHS, Bethesda, MD. Draft May 1995.

<sup>23</sup> Wagner EH, LaCroix AZ, Buchner DM, Larson EB. Effects of physical activity on health status in older adults I: Observational studies. Ann Rev Public Health. 13:451-68.

<sup>24</sup> "Healthy Eating and Physical Activity: Focus Group Research with Contemplators and Preparers, Executive Summary." Centers for Disease Control and Prevention, Atlanta, GA. 1995.

<sup>25</sup> King, A., et al. Environmental and policy approaches to cardiovascular disease prevention through physical activity: Issues and opportunities. Health Education Quarterly. 22(4):499-511.

<sup>26</sup> King, A. Community and public health approaches to the promotion of physical activity. Medicine and Science in Sports and Exercise. 1994:1405-1412.

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<sup>28</sup> Ibid.